

December 8, 2016

Elizabeth Hughes, Town Planner  
Brooke Whiting Cash, Chair, Planning Board  
Robert Sepucha, Chair, Zoning Board of Appeals  
Town of Concord  
141 Keyes Road  
Concord, MA 01742



**Re: ITW Middlesex School Cell Town Application Filed 12-1-16**

Dear Elizabeth Hughes, Brooke Whiting Cash, and Robert Sepucha,

We are writing collectively as Bartkus Farm residents in response to the ITW Middlesex School Cell Tower application filed last week. In advance of the forthcoming proceedings, during your due diligence, we ask that you consider our concerns as an abutting neighborhood.

While we have reached out to Middlesex School twice in advance of their filing, once in October and again in November, we only received a response the day of their filing with neither rationale behind their decision nor any attempt to address our concerns.

We are not opposed to the existence of a cell tower per se within the Middlesex School property, rather we are opposed to its proposed location, height, and design per the application.

We are certain that Middlesex School has other options for choosing a location suitable for the tower, including keeping the existing structure in the existing location. The proposed application as written violates a number of Town Zoning by-laws specifically:

1. **Zoning Board by-law (7.8.4.2.j.ii) violation** of locating a cell tower within 1,000' of residential homes. The attached **Figure 1** shows a representation of a 1000' radius drawn from the existing PWCS on the 90' smokestack. **Figure 2** shows a representation of a 1000' radius drawn from the proposed 120' monopole. The conclusion is that all of our homes will now be within 1000' of the monopole where they were not before.
2. **Zoning Board by-law (7.8.4.2.j.i) violation** of locating a cell tower within 1,000' of school. The existing PWCS on the smokestack most likely was granted a waiver at the time of its prior filing, but now all teacher residences along the back entrance road are within the 1,000' radius of the proposed 120' monopole.
3. **Zoning Board by-law (7.8.4.2.e) violation** of exceeding the 20' tree canopy. The 120' monopole will stand far above the existing tree canopy and may be further accentuated after the proposed removal of 34 trees. We ask you to visit the site when the balloon test is performed on December 29<sup>th</sup> and specifically make a point to understand why the height needs to be increased from the existing 90' to 120'.
4. **Zoning Board by-law (7.8.4.1.a) violation** of proposed solution not closing a significant gap in coverage. This is based on the findings of Verizon, AT&T and T-Mobile studies included in the application. Residents of Concord already receive excellent coverage and good signal strength from Verizon, A&T and T-Mobile located on the existing PWCS on the existing smokestack.

5. **Zoning Board by-law (7.8.1) violation of the purpose and intent by-law.** This specific Zoning Board by-law is in place to maintain aesthetics, property values, use of existing structures, and minimize adverse effects on residents. We all agree that the town of Concord is a historical, attractive rural residential community with beautiful wooded conservation and wetlands, known for high quality of life and excellent schools. The proposed monopole would be out of character with the general nature, beauty and landscape of our neighborhood. It would lead to deterioration in the quality of life we treasure in Concord. Specifically the proposed monopole will impact the following subsections of this Zoning Board by-law:
- **(7.8.1.a)** The proposed monopole does not protect the visual, aesthetic or scenic aspect for Middlesex School Community nor the surrounding community. We will be able to visually see the pole from nearly all places from Bartkus Farm, especially in the winter. In terms of aesthetics, Middlesex School is replacing a disguised smokestack with an unattractive exposed monopole that will be able to be seen from nearly every point within Middlesex School campus and by neighbors on Lowell Road and Bartkus Farm. We all purchased our homes because of the tranquility, neighborhood and the beauty of Concord and surrounding area. A monopole will put all of those characteristics in jeopardy.
  - **(7.8.1.b)** The proposed monopole does not encourage the use of existing structures and towers. Middlesex School has the option to keep the existing PWCS on the smokestack. We would ask that the Town Planning Boards dig deeper into their claim that “many locations on the Middlesex School property have been researched” as cited in their cover letter. The campus is large and certainly contains other suitable candidate locations.
  - **(7.8.1.c)** The proposed monopole does not protect property values. The economic impact will include decreased property values as studies have demonstrated that upwards of 90% or more of those surveyed would not choose to live near a cell tower.<sup>1</sup> When it comes time for any of us to sell, we will certainly be deeply and negatively impacted if there is a cell tower so visible and near. Additionally, studies show that sellers experience a 10-19% reduction in their home value.<sup>2</sup> While our home values are decreasing, Middlesex School stands to receive substantial revenue from this proposed monopole at the expense of the broader Concord community.
  - **(7.8.1.e)** The proposed monopole does not minimize any adverse impacts on the residents of the Town. A number of the residents of our communities on Lowell Road and Bartkus Farm are scientists and health specialists with advanced degrees, including in specialties of physics, epidemiology, biology, engineering, and the medical sciences, and have reviewed in detail the single health hazard assessment report commissioned regarding the proposed Industrial Tower & Wireless PWS Middlesex School tower (Haes report<sup>3</sup>). We all have grave concerns regarding both the methodology adopted in this report as well the conclusions of the paid author. The proposed monopole structure and associated radiation exposure do indeed clearly constitute a significant and adverse impact on our communities, particularly as it relates to cumulative radiation exposure in children and adults, and on our environment and ecosystems. We believe that such impacts are clearly consistent

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<sup>1</sup> <http://electromagnetichealth.org/electromagnetic-health-blog/survey-property-desirability/>

<sup>2</sup> <http://electromagnetichealth.org/wp-content/uploads/2014/06/TAJSummer05p256-277.pdf>

<sup>3</sup> Haes Report, August 25, 2016 on Proposed Industrial Tower & Wireless installation at 1400 Lowell Road, Concord

with the definition of 'adverse impacts' as contemplated in Zoning by-law 7.8.1.e. Should the Town decide to pursue the ITW/Middlesex School application, we would respectfully request that we be allocated sufficient time to present our health hazard concerns to the relevant Town structures, on behalf of the affected communities and residents on Lowell Road, Bartkus Farm, and beyond. While our analysis is too lengthy to review in detail here, we have attached **Appendix A** (and supporting **Figure 3** and **Figure 4**) with an overview of our preliminary findings and concerns.

Aside from Zoning by-law violations cited above, we call your attention that last month, the MBTA announced plans to build four (4) 74-foot cell phone towers. These new tower installations will also have the option to expand private revenue generation by adding antennas for cell phone companies and other commercial users. These new antennas perhaps make this proposed ITW monopole redundant. We suggest that you all take under consideration all existing and proposed towers and antennas (one LTW monopole and four MBTA monopoles in Concord).<sup>4</sup> There are already plenty of related structures. In addition to the 27 towers, there are another 83 antennas within a 4-mile radius of Middlesex School.<sup>5</sup> **Figure 5** profiles towers within a 4-mile radius.

We understand that you need to conduct due diligence including hiring an outside consultant (specified in your December 15<sup>th</sup> meeting agenda). Please be aware that the forthcoming balloon test is scheduled for the morning of December 29<sup>th</sup>, a time when nearly all of the Middlesex School community is on holiday so they will not be aware of the impact, and a time where the majority of our street residents will be away at work.

We are asking that during your due diligence you consider our above concerns and address them. As it stands now, **the application should not be approved** as it is in direct violation of several zoning by-laws and offers health risks, significant economic risk, and unattractive aesthetics to the community at large.

Sincerely,  
Residents of Bartkus Farm

Suzanne and Rob Mirak (#6),  
Bin Weng and Kun Liu Weng (#8),  
Scott Li and Shirley Ao (#9),  
Aram and Anna Adourian (#11),  
Lisa Hansel (#14),  
AJ and Sheila Sohn (#15),  
Stuart and Laura Strong (#16),  
Dan and Julie del Sobral (#18)

#### Attachments

- **Figure 1:** 1000' radius from existing smokestack
- **Figure 2:** 1000' radius from proposed monopole
- **Appendix A:** Summary Concerns to Haes Report
- **Figure 3:** Bands denoting distance from existing smokestack
- **Figure 4:** Bands denoting distance from proposed monopole
- **Figure 5:** Antenna - Towers Existing and Proposed – 4 mile radius

<sup>4</sup> <http://concord.wickedlocal.com/news/20161101/concerns-in-concord-about-possible-mbta-cell-towers>

<sup>5</sup> <http://www.antennasearch.com/sitestart.asp>



Figure 1  
1000' Radius from Existing Smokestack with cell array

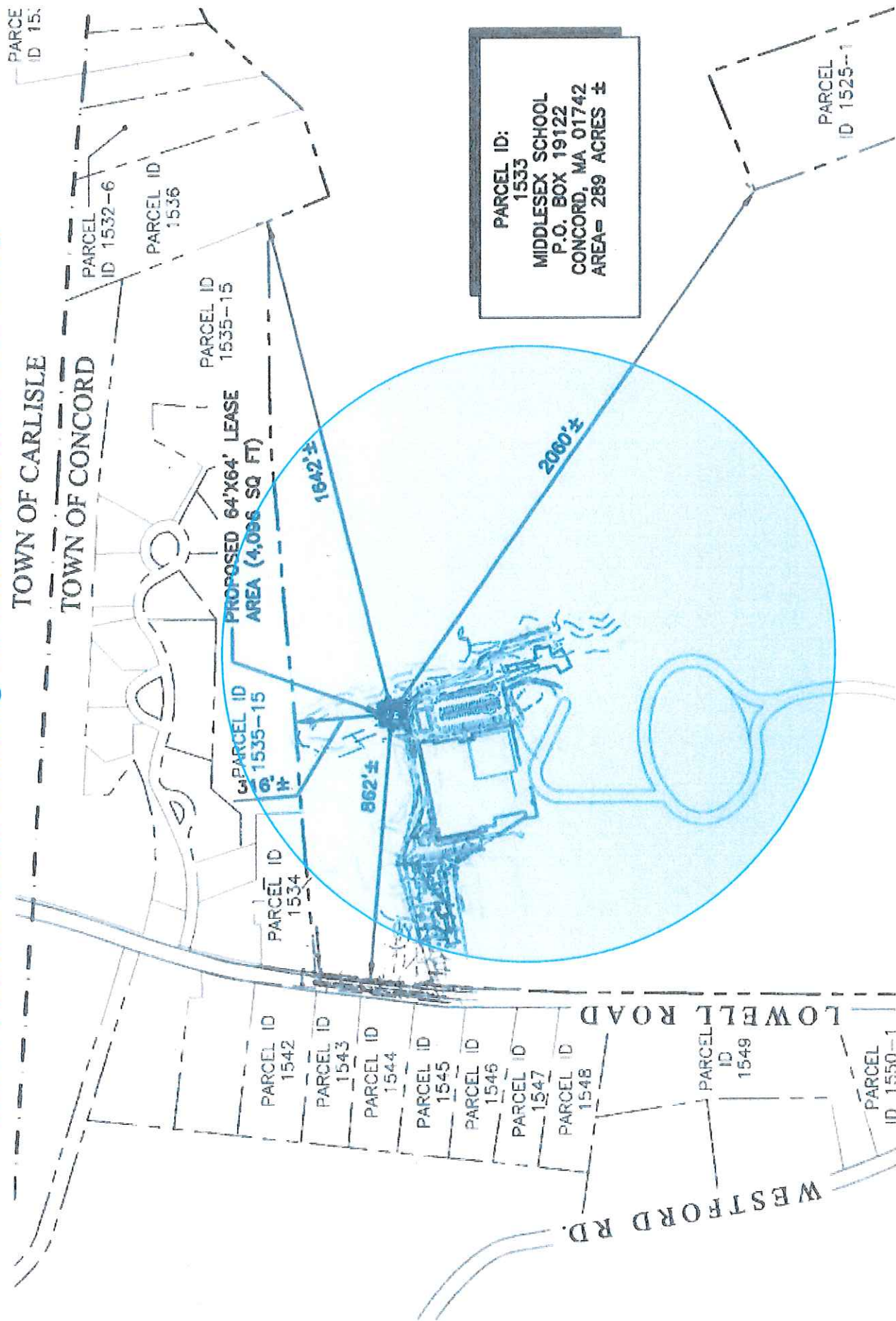
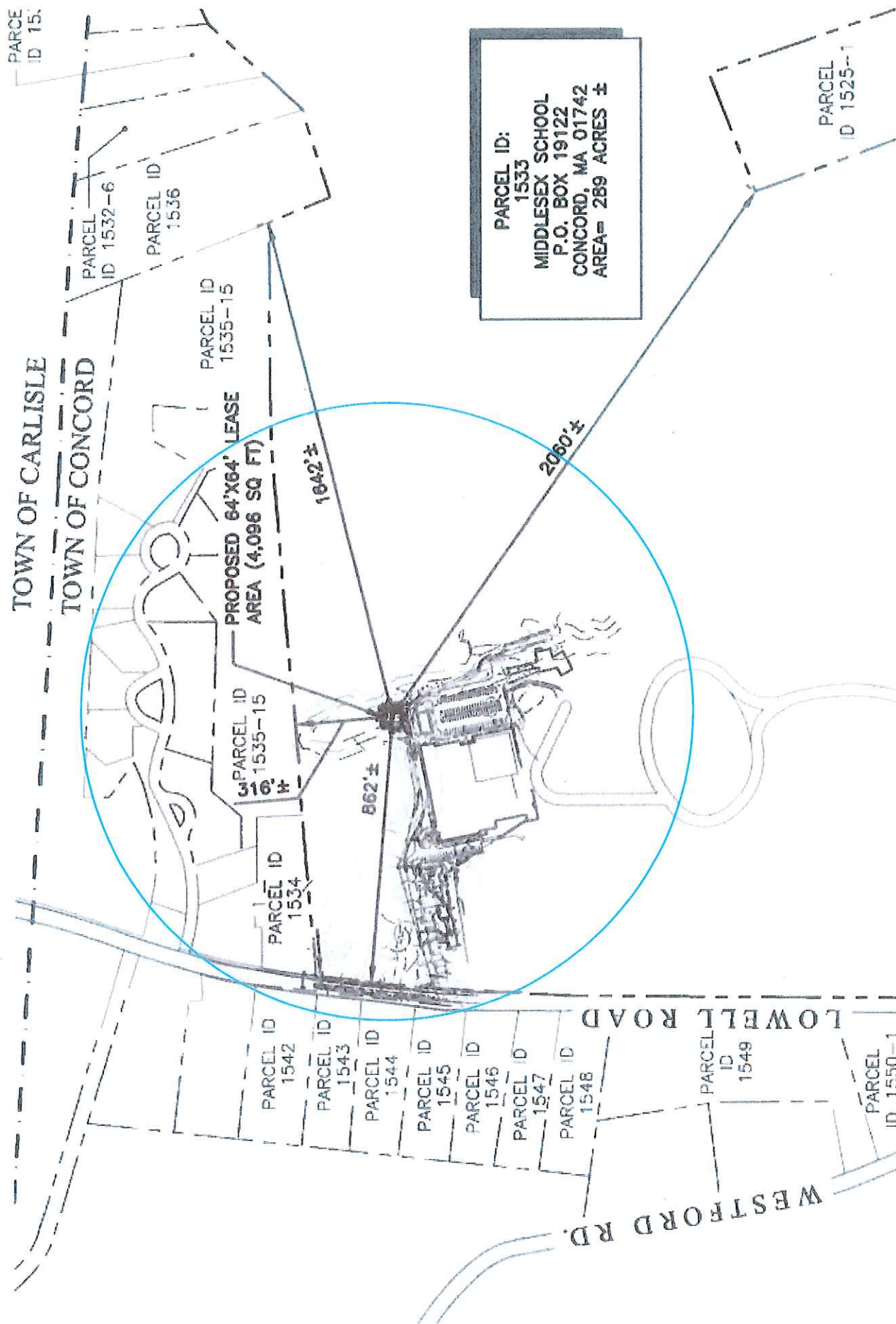


Figure 2  
1000' Radius from Proposed Tower - all Bartkus Farm residents inside



## Appendix A

### Summary of Concerns to Haes Report<sup>1</sup>

A number of the residents of our communities on Lowell Road and Bartkus Farm are scientists and health specialists with advanced degrees, including in specialties of physics, epidemiology, biology, engineering, and the medical sciences, and have reviewed in detail the single health hazard assessment report commissioned regarding the proposed Industrial Tower & Wireless PWS Middlesex tower.

We and our communities have grave concerns regarding both the methodology adopted in this report as well the conclusions of the paid author, and believe that the proposed monopole structure and associated radiation exposure do indeed clearly constitute a significant and adverse impact on our communities, particularly as it relates to cumulative radiation exposure in children and adults, and on our environment and ecosystems. We believe that such impacts are clearly consistent with the definition of 'adverse impacts' as contemplated in by-law 7.8.1.e.

Should the Town decide to pursue the ITW/Middlesex School application, we would respectfully request that we be allocated sufficient time to present our health hazard concerns to the relevant Town structures, on behalf of the affected communities and residents on Lowell Road, Bartkus Farm, and beyond. In the meantime, we have very serious concerns that the methodology in the commissioned report is flawed, and as such that the conclusions in this report are not relevant for the purposes of the Town in applying the by-laws for the proposal, including 7.8.1.e.

The following is an overview of our preliminary findings and concerns.

- The sole parameter on which health hazard appears to be assessed is *instantaneous* radiation exposure, whereas fundamentally, health hazards arise due to *cumulative* radiation exposure. A close reading of the commissioned report (Haes 2016) finds that any conclusions regarding safety are solely based on radiation exposure in measurement units of Joules of energy absorbed per second per square-centimeter of skin area ( $\text{Watts/cm}^2 = \text{Joules/second per cm}^2$ .) In other words, to assess cumulative exposure of residents who live adjacent to the monopole antenna, one would multiply Haes's *instantaneous* radiation exposure figures by exposure time, which of course is extremely large for adults and children who will reside in residential dwellings on time scales of years or decades.
- A simple way to think about the speciousness of the Haes report's conclusions is to consider a common consumer microwave oven, which is rated in units of Watts. It would be nonsensical to claim that a 500 Watt microwave oven is safe because it is rated at 500 Watts, and therefore any item placed in such an oven run continuously for many years would yield no adverse impact on the item. It is the *cumulative* effects from which the fundamental health hazards arise, not the instantaneous exposure. This is the fundamental concept of exposure in epidemiology, and similar arguments hold for analogous exposures such as high intensity ultraviolet exposure from the sun, medical diagnostic radiation exposure (CT scans or X-rays), etc. It is folly to apply the methodology of the Haes report to long-term continuous radiation exposure in a residential setting. We believe by-law 7.8.1.e is clearly contravened by basic epidemiological considerations.
- We have reviewed regulatory guidelines in other jurisdictions, and we have found that such an antenna structure as is being proposed would most likely not be permitted elsewhere to be

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<sup>1</sup> Haes Report, August 25, 2016 on Proposed Industrial Tower & Wireless installation at 1400 Lowell Road, Concord

placed in a residential neighborhood. Exposure limits, for example in Canada, Australia, Israel, Germany, Belgium and elsewhere, and even in Russia and Bulgaria, are significantly lower for residential areas within the high-risk radiation zones adjacent to such antennas. We do not believe, contrary to the commissioned report, that these more stringent limits are unwarranted.

- We are also seriously concerned about the adverse impacts of radiation exposure from the proposed antenna on the natural environment and ecosystem in the vicinity of the structure. Specifically, the high-risk radiation region has been demonstrated to be associated with risk to both farm animals and pets as well as to birds (interference with navigation, reproduction, avian species decline and non-sustainability). Significantly, in honey bees, colony collapse disorder has recently been strongly associated with proximity to cell phone towers of the kind being proposed for the Middlesex School; we are aware of bee-keeping activities in our community. We believe that these and many other adverse impacts on our treasured natural environment and ecosystem must be considered in addition to the health hazard to our residents and their children.
- We note, for completeness, that by-law 7.8.1.e reads in part as follows: “[...] (e) minimizes any adverse impacts on the residents of the Town (such as, but not limited to, visual blight on viewsheds, attractive nuisance, noise and falling objects) with regard to the general safety, welfare and quality of life in the community”. It is our contention that both the engineering design and the location of the proposed antenna tower clearly do not “minimize adverse impacts” on the residents of the Town in terms of general safety, welfare, and quality of life. For example, the magnitude of health hazard risk, in our calculation, far exceeds that of ‘falling objects’ or ‘noise’. Indeed, we contend that the proposed tower instead significantly *increases* adverse impacts both on human health risk and on our natural environment and ecosystem, and as such must be disallowed.
- *Lowell Road parcels, Bartkus Farm parcels, and surrounding communities are within the high-risk radiation regions.* Based on the operating frequencies of the proposed tower, parcels on Lowell Road and all of Bartkus Farm, and likely many other parcels in the community, would lie within the ‘near-field’ (Fresnel) and Fraunhofer radiation regions of the antenna, where radiation fields and propagating waves are dominant. See **Figure 3** and **Figure 4**.
- These latter two radiation regions are the ones most strongly associated epidemiologically with adverse health hazards. These health hazards have been epidemiologically demonstrated to include cancers and tumorigenesis, DNA damage, endocrine system disorders, and multiple other disorders.
- Epidemiological studies have consistently demonstrated elevated and increased health risk especially in children and infants.
- Children and infants are especially vulnerable to cumulative radiation exposure of the type generated by the proposed tower. This is due, for example, to children’s and infants’ small and thinner skull structure which increases radiation absorption cross-section compared to adults, increased rates of cell division during growth which renders cells more susceptible to DNA damage, and ongoing myelin sheath development which renders the developing central nervous system particularly exposed to exogenous radiation.
- On Bartkus Farm alone, there are twenty-four (24) young children who would be directly placed at risk should the proposed monopole antenna be constructed and made operational. In addition, dozens of our fellow residents are of childbearing age in the affected Lowell Road, Bartkus Farm and adjacent areas.



Figure 3

Selection from Figures 3 and 4 of the Haes Report

Bands denote distance from Bartkus Farm homes (1125' to 1375') from Existing Smokestack

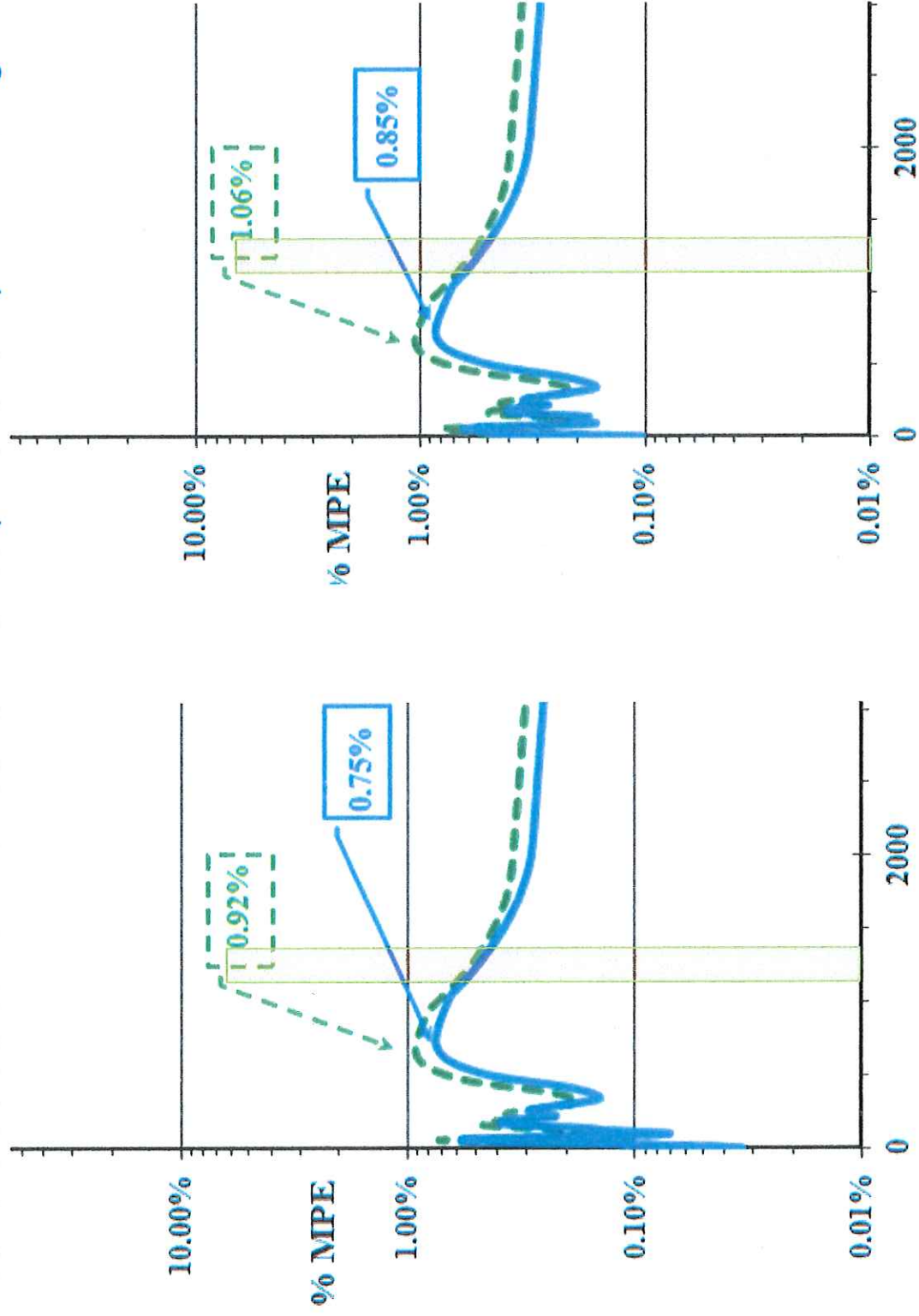
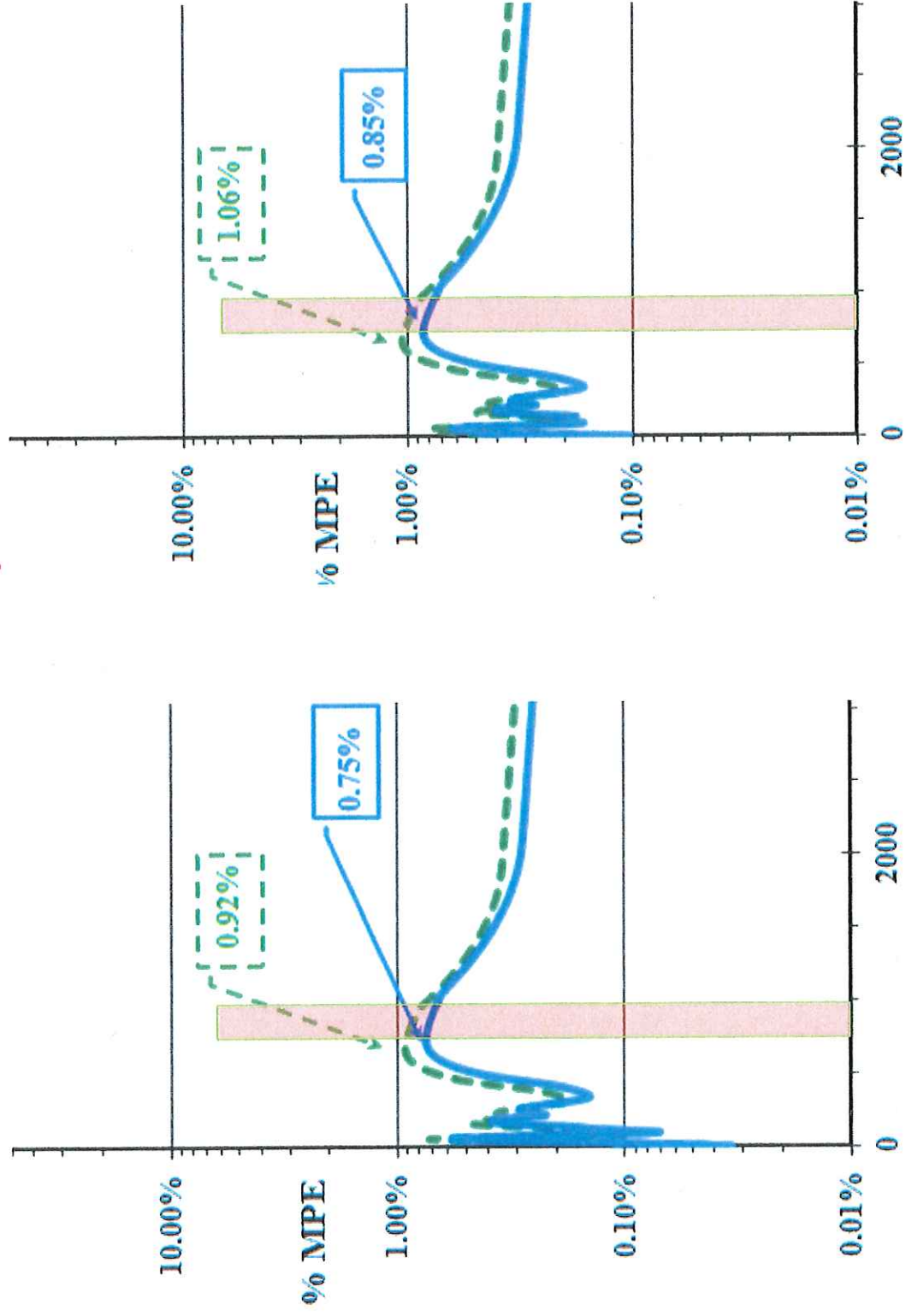




Figure 4

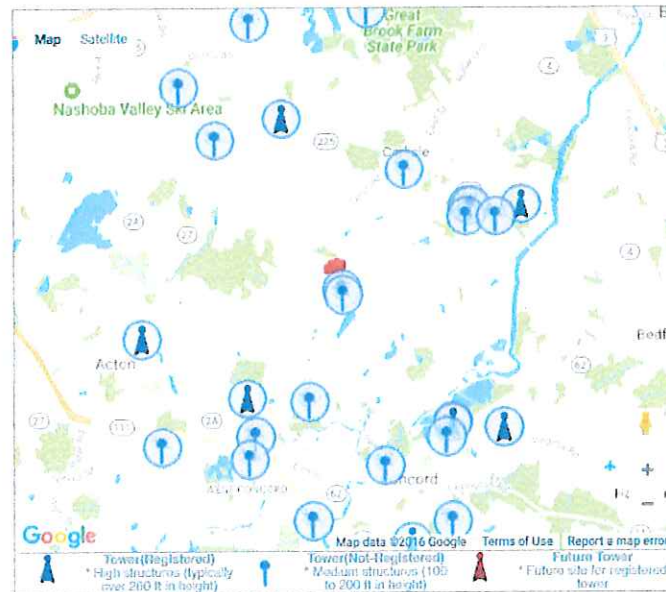
Selection from Figures 3 and 4 of the Haes Report

Bands denote distance from Bartkus Farm homes (725' to 975') from Proposed Monopole



**Figure 5**  
**Antenna Existing and Proposed – 4-mile radius**

**Tower Structures - (Bartkus Farm, Concord, MA 01742)**



**Tower Search Results**



**Alert!** 27 Towers (8 Registered, 10 Not Registered) found within 4.00 miles of Bartkus Farm, Concord, MA 01742.



**Info!** The NEAREST Tower is .12 miles away and is owned by Industrial Tower And Wireless, Llc..



**Ok!** No Applications for Future Towers detected as of 12/09/16.

Tower Type	ID Num	Site Owner	Height	Dist
	(1)	Concord, Town Of	110 feet	2.32 miles
	(2)	Sba Monarch Towers II, Llc	30 feet	2.36 miles
	(3)	Celco Partnership	105 feet	2.69 miles
	(4)	Sbc Six Company	112 feet	2.71 miles
	(5)	Sba Towers II Llc	100 feet	3.31 miles
	(6)	T-Mobile Northeast Llc	102 feet	3.47 miles
	(7)	Concord Carlsde School District	104 feet	3.66 miles
	(8)	Ccalt Llc	150 feet	3.66 miles
	(1)	Industrial Tower And Wireless, Llc	120 feet	.12 miles
	(2)	Celco Partnership	94 feet	.21 miles
	(3)	Omnipoint Communications, Inc.	125 feet	1.72 miles
	(4)	Carlisle Fire Department	164 feet	1.81 miles
	(5)	Nexel Comm Of The Mid Atlantic	120 feet	2.32 miles
	(6)	American Tower	165 feet	2.43 miles
	(7)	Martin Varnish I & Rust Pc	190 feet	2.46 miles
	(8)	Omnipoint Communications, Inc. (new England)	85 feet	2.57 miles
	(9)	Blank	200 feet	2.60 miles
	(10)	Sprint Pcs	114 feet	2.77 miles
	(11)	Nexel Communications	120 feet	2.84 miles
	(12)	Department Of Corrections	127 feet	2.91 miles
	(13)	Adit Wireless Services	175 feet	2.93 miles
	(14)	Nynex Mobile Communications Company	111 feet	3.23 miles
	(15)	Dane Ershen (p)	150 feet	3.57 miles
	(16)		117 feet	3.72 miles
	(17)	Omnipoint Communications, Inc. (new England)	100 feet	3.76 miles
	(18)	Omnipoint Communications, Inc. (new England)	100 feet	3.86 miles
	(19)	Sba Towers	115 feet	3.91 miles
	Future	(No Towers Detected)		